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File Code: 3420
Date: September 18, 2007

Scott Travis
Superentendent, Canyon de Chelly National Monument
NPS
PO Box 588
Chinle, AZ 86503

Dear Mr. Travis:

On July 31, 2007 Bobbe Fitzgibbon, staff entomologist, met with Tess Johnstone, resource specialist at Canyon de Chelly Nation Monument. Ms. Johnstone had requested technical assistance with pinyõn damage within the view shed areas of the monument. While driving the south rim road to Spider Rock, they observed evidence of widespread early season and current defoliation by a conifer sawfly. Most of the sawfly larvae in the area had pupated, however there were few groups of larvae still feeding on host trees. The yellow coloration of the remaining larvae enabled identification of the sawfly as *Zadiprion rohweri.*

Sawflies are members of the order hymenoptera related to bees and wasps. Unlike bees and wasps the abdomen of the adult sawfly is broadly joined to the thorax. Many sawflies are considered forest pests. Sawflies in the family Diprionidae, the conifer sawflies, include many destructive species. Most feed openly, visibly, on the foliage of conifers, often feeding gregariously in large groups. One member of this family is *Zadiprion rohweri* which feeds on *Pinus edulis,* the species of pinyõn found at the monument.

This species of sawfly is considered a minor pest. A multiyear outbreak occurring in the mid 1990s caused considerable heavy to complete defoliation, however minimal tree mortality resulted from this outbreak.

There are 1 to 2 generations per year. The female emerges in early spring and uses her sawlike ovipositor to lay a row of tiny eggs within the pine needles. The eggs hatch and young larvae begin to feed on the needle edges leaving a characteristic tuft of uneaten desiccated midveins. Older larvae continue to feed gregariously on older foliage but will feed on current year foliage when all of the older foliage is removed. Smaller trees can be completely defoliated. Mature larvae will pupate in the duff at the base of the trees. Pupae will either overwinter in the duff to emerge the next spring or emerge to produce a second generation. An outbreak of this insect is likely to last 1 to 3 years and collapse when natural enemies are able to reduce population numbers and keep the population in check.

On the south rim road, especially in the vicinity of Spider Rock, they observed 85-90% of the pinyõn with some evidence of defoliation. Approximately 40% of the trees along the south rim road had moderate to severe defoliation. Branch mortality was starting to occur in some heavily

defoliated trees and at least one tree that had been moderately defoliated was noted to have been attacked by pinyon ips, *Ips confusus.*

Due to additional stress from the extended drought experienced within this area, higher levels of tree mortality should be anticipated over the next few years compared to the 1990s outbreak. This is a native insect and outbreaks are a natural part of its cycle. While branch die back and higher levels of mortality are likely to occur over the next few years, control measures are not likely to be warranted. Suppression projects are typically targeted at high value recreation or administrative sites. Also, at this stage of the outbreak control measures, in this case the use of pesticides, could reduce the effectiveness of the natural enemies, lengthening the duration of the outbreak or releasing other herbivores. It is likely that the result of this outbreak will be simply to reduce the density of the pinyõn in infested areas. Dead pinyõn around residences will pose a fire hazard and should be removed or used as fire wood. Trees stressed by defoliation can be more susceptible to bark beetle attack. Residents should be encouraged to examine pinyõn firewood to ensure that it is not currently infested with bark beetles before stacking near green uninfested pinyõn.

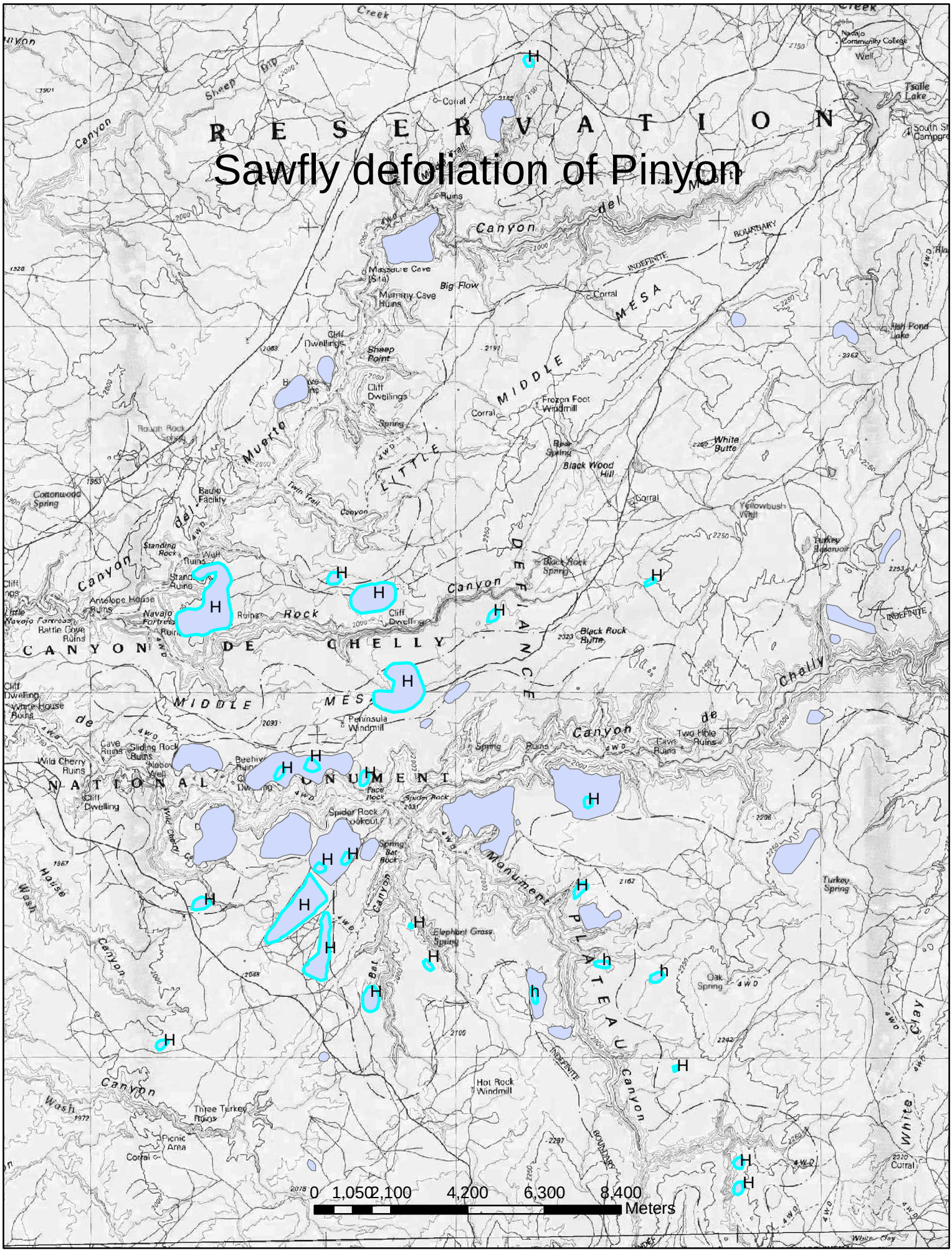
During this year's aerial survey, we recorded spotty light to heavy defoliation of the pinyon covering about 8,500 acres inside and around the Monument. A map of defoliated areas will accompany this letter. Areas highlighted and marked with H are heavily defoliated areas about 1,800 acres. All other polygons should be considered as low sawfly related defoliation, approximately 6,700 acres.

If you have any questions please feel free to contact Bobbe Fitzgibbon (928-556-2072) bfitzgibbon@fs.fed.us.

Sincerely,

/s/ John Anhold
JOHN ANHOLD
Arizona Zone Leader Forest Health

cc: Bobbe Fitzgibbon
Joel McMillin
Terry J Rogers
David A Conklin
MaryLou Fairweather
Tess Johnstone


Sawfly defoliation of Pinyon
0 1,050 2,100 4,200 6,300 8,400
Meters